Science Education & Industry
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Why Is It So Important?
Presentation Outline
What are the benefits of science education to the individual and to the nation?
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- Why is science education important to industry?
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- Why is science education important to industry?
- What can industry do to improve science education?
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- Why is science education important to industry?
- What can industry do to improve science education?
- What are some successful science education programs in the Lehigh Valley area of PA?
Benefits of Science Education
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- Knowledge and appreciation of nature.
Why does the sun shine?
...and why does the shape of the moon change?
Why is the sky blue?
...and why does it turn red at sunset?
Why does snow fall only when the temperature drops below a certain level?
...and why do individual snowflakes have hexagonal symmetry?
Why do children resemble their parents?
...and why are some twins identical?
Why is everything on earth made up of only about 100 elements?
...and why can they be arranged in a periodic way?
Benefits of Science Education

- Knowledge and appreciation of nature.
- An understanding of our technical society.
How can airplanes fly?
What happens when you send an e-mail?
Just how **DO** you go about programming a VCR?
Why shouldn’t you stick a fork in a toaster?
Benefits of Science Education

- Knowledge and appreciation of nature.
- An understanding of our technical society.
- Logical approaches to problem solving.
Why does my car battery keep on going dead?
Why won’t my computer boot up?
Benefits of Science Education

- Knowledge and appreciation of nature.
- An understanding of our technical society.
- Logical approaches to problem solving.
- Ability to process new information and draw appropriate conclusions.
Is human activity causing global warming and, if so, what can we do about it?
Which type of bag is more environmentally friendly -- paper or plastic?
Benefits of Science Education

- Knowledge and appreciation of nature.
- An understanding of our technical society.
- Logical approaches to problem-solving.
- Ability to process new information and draw appropriate conclusions.
- Healthy skepticism.
Is it really true that nothing can travel faster than the speed of light?
Can nuclear power plants be made totally failsafe?
….and would it be a good idea to buy a chicken farm next to one?
Christopher Moltisanti’s skeptical question ---
Christopher Moltisanti’s skeptical question --- “How do we really know that no two people have the same fingerprints?”
Wouldn’t we have to check the fingerprints of everyone on earth? And wouldn’t we have to check the fingerprints of everyone who ever lived?
Benefits of Science Education to Our Nation
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- An informed citizenry capable of making good choices about the many technical issues confronting our nation and our world.
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- An informed citizenry capable of making good choices about the many technical issues confronting our nation and our world.
- A competent and well trained work force able to handle the diversity of current and future jobs created by our technological society.
Why is Science Education Important to Industry?
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- The manufacturing process of virtually every product involves the application of scientific and engineering principals and techniques.
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  - Computers and digital electronic equipment
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  - Computers and digital electronic equipment
  - Pharmaceutical products
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  - Pharmaceutical products
  - Telecommunications devices
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  - Polymers and plastics
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  - Computers and digital electronic equipment
  - Pharmaceutical products
  - Telecommunications devices
  - Polymers and plastics
  - Planes, trains and automobiles
Why is Science Education Important to Industry?

- The manufacturing process of virtually every product involves the application of scientific and engineering principals and techniques.
Why is Science Education Important to Industry?

- The manufacturing process of virtually every product involves the application of scientific and engineering principals and techniques.
  - Paper
Why is Science Education Important to Industry?

- The manufacturing process of virtually every product involves the application of scientific and engineering principals and techniques.
  - Paper
  - Paint
Why is Science Education Important to Industry?

- The manufacturing process of virtually every product involves the application of scientific and engineering principals and techniques.
  - Paper
  - Paint
  - Steel
Why is Science Education Important to Industry?

- The manufacturing process of virtually every product involves the application of scientific and engineering principals and techniques.
  - Paper
  - Paint
  - Steel
  - Textiles
Why is Science Education Important to Industry?

The manufacturing process of virtually every product involves the application of scientific and engineering principals and techniques.

- Paper
- Paint
- Steel
- Textiles
- Cement
Why is Science Education Important to Industry?

- Virtually every job in a corporation requires at least some technical knowledge of how its products are manufactured and used.
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  - Research & Engineering
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  - Research & Engineering
  - Production
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  - Research & Engineering
  - Production
  - Quality Assurance
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  - Research & Engineering
  - Production
  - Quality Assurance
  - Sales & Marketing
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  • Research & Engineering
  • Production
  • Quality Assurance
  • Sales & Marketing
  • Senior Management
Why is Science Education Important to Industry?

- In addition virtually every job in a corporation now requires at least some ability to use high tech communications and data processing devices.
Why is Science Education Important to Industry?

- Desktop computers
Why is Science Education Important to Industry?

- Laptop computers
Why is Science Education Important to Industry?

- Personal Digital Assistants
Why is Science Education Important to Industry?

- Wireless communication devices
Why is Science Education Important to Industry?

- Even UPS and Postal Service delivery people now use wireless digital devices to track and record deliveries.
What Can Industry Do to Improve Science Education?
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- Communicate how important science education is to the business you are in!
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  - Get involved with local school boards and governmental organizations.
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  - Push for better funding of science education
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  - Get involved with local school boards and governmental organizations.
  - Push for better funding of science education
  - Identify and join business/education partnerships in the local area.
What Can Industry Do to Improve Science Education?

 comunicación about how important science education is to the business you are in!

• Get involved with local school boards and governmental organizations.
• Push for better funding of science education.
• Identify and join business/education partnerships in the local area.
• Look for speaking opportunities.
What Can Industry Do to Improve Science Education?

- Support science education in local schools.
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  - Allow employee volunteers to visit schools to help teachers with science activities or to take part in career days.
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  - Host student tours and shadow days.
  - Provide internships for teachers.
  - Donate money, supplies and equipment.
  - Focus efforts at schools in lower income areas where the support needs are often greater.
What Are Some Successful Efforts in the Lehigh Valley?
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- Individual Corporate Efforts
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  - Air Products & Chemicals, Inc.
“Our goal is to improve the quality of education and training of students and help develop opportunities for under-represented minority students in disciplines related to the interests of the company. We are also increasingly concerned with helping students go on to higher education, and provide scholarships, mentors, and internship opportunities.”
What Are Some Successful Efforts in the Lehigh Valley?

- Individual Corporate Efforts

  - Air Products & Chemicals, Inc.

  - PPL Corporation
• A Study in Hydropower
• Electrical Safety
• Energy for Living Teacher Workshops
• "It Started With Edison" Career Awareness Program
• Nuclear Energy Seminar for Teachers (NEST)
• Partners in Education Volunteer Program
• Project Earth Environmental Education Grants
Total Students Reached by PPL Education Programs

Students reached by programs in 2001

- 183,886 Trees for the Future
- 25,600 Environmental awareness workshops
- 22,000 Hydropower curriculum
- 20,000 “It Started with Edison” career awareness curriculum
- 6,093 Electrical safety poster contest
- 2,600 Nuclear energy seminar
What Are Some Successful Efforts in the Lehigh Valley?

- Individual Corporate Efforts
  - Air Products & Chemicals, Inc.
  - PPL Corporation
  - Minerals Technologies Inc.
Student lab tours
Teacher internships
Educational grants
Support for local Science Fest events
What Are Some Successful Efforts in the Lehigh Valley?

- Individual Corporate Efforts DO Help!

- Air Products & Chemicals, Inc.

- PPL Corporation

- Minerals Technologies Inc.
What Are Some Successful Efforts in the Lehigh Valley?

Lehigh Valley Business/Education Partnership
What Are Some Successful Efforts in the Lehigh Valley?

Lehigh Valley Business/Education Partnership

A non-profit collaboration between local schools and local industries to provide resources for improved K - 12 education
Mission

Promote education for productive citizenship, lifelong learning, and economic development in the Lehigh Valley through the joint leadership of business and education.

Goals

- Raise the achievement levels for all students
- Support and promote career preparation and development for all students
- Influence regulation and legislation affecting education at the local, state and federal levels
What Are Some Successful Efforts in the Lehigh Valley?
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- Founded in 1989 at Lehigh University
- Now an independent non-profit corporation
- Currently housed in Bethlehem Steele’s former South Bethlehem Offices
Discovery Center of Science & Technology

- Dedicated to advancing science education in schools throughout northeastern Pennsylvania and northwestern New Jersey.
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- Pools resources of area corporations, colleges and universities to offer hands-on educational resources that no single district can afford alone.
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- Offers teacher training and conducts lab programs in area schools.
- At the center, students can explore over 100 interactive exhibits demonstrating real world applications of science and technology.
In 2003 a Merger and a New Beginning
The New Home of the Da Vinci Discovery Center on the Campus of Cedar Crest College in Allentown (to be completed summer 2005)
“Finding good workers is posing a big problem as hiring picks up. . . .”
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“Some manufacturers can’t find workers with even basic skills…reading, math and science…for advanced technology production lines.”
“Finding good workers is posing a big problem as hiring picks up. . . .”

“Some manufacturers can’t find workers with even basic skills...reading, math and science...for advanced technology production lines.”

“That’ll only get worse because of the HUGE shortage of teachers. More than 2 million new K - 12 are going to be needed by 2010.”
Effective science education for all students is critical to our nation’s future.
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Not every child will grow up to be a scientist or engineer, but they all must be able to succeed in an increasingly technological society.
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Everyone must pitch in to see that our children achieve this important goal.